

ARC-14743-1

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Reply To Examiner's Remarks SEP 20 2006

Claims 1, 3-4 and 6-12, as amended, are presented for consideration. Claims 13-45 and 47 are canceled.

The Examiner rejects claims 1, 3-4 and 6-12 under 35 U.S.C. 103(a) as obvious in view of combined disclosures of U.S. patent No. 4,039,997, issued to Huang et al, U.S. Patent No. 5,079,082, issued to Leiser et al, and Published Patent Application ("PPA") No. 2001/0051218 A1, issued to Wittenauer et al.

The Huang et al patent discloses use of a ceramic substrate with a coating, not an integrated layer, of 25-90 percent vitreous glass frit (e.g., borosilicate) and 10-75 percent metal silicide, by weight percent.

The Leiser et al patent discloses a porous body of low density, fibrous, silicon-based insulation material that is impregnated with borosilicate glass, a silicon tetraboride luxing agent and a molybdenum silicide emittance agent. A single, relatively thick, porous coating (26 in Figure 2) of thermally insulating material is provided on at least one substrate surface.

The Wittenauer et al PPA discloses use of a molybdenum disilicide and/or tantalum disilicide coating for a substrate surface, applied to impregnate a high temperature substrate, such as TUF1 or RCG.

None of these references discloses or makes obvious use of two impregnating sub-layers, forming a functionally gradient layer, each with a different composition of $TaSi_2$, $MoSi_2$ and $B_2O_3 \cdot SiO_2$, where composition of the first sub-layer (adjacent to a high temperature substrate) is chosen so the the first sub-layer coefficient of thermal expansion ("CTE") is substantially equal to the substrate CTE, and composition of the second sub-layer is chosen to provide a covering that withstands temperatures up to at least 3000 °F and is chosen to reduce the CTE difference between the first sub-layer and the second sub-layer.

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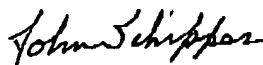
This is the essence of amended claim 1, which includes the limitations of former claims 1, 7 and 8.

The combined disclosures of the Huang et al patent, the Leiser et al patent and the Wittenauer et al PPA do not disclose or suggest the combination of features recited in amended claim 1: CTE matching is not a concern in these references. The Applicants believe that claim 1, as amended, of the subject patent application is allowable over the references cited and applied by the Examiner.

Claims 3-4 and 6-12 depend upon amended claim 1 and are believed to be allowable if claim 1, as amended, is allowable.

The Applicants request that the Examiner pass the application, including claims 1, 3-4 and 6-12, as amended, to issue as a U.S. patent.

Respectfully Submitted,



John Schipper

Date: 20 September 2006

Patent representative for Applicants